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Ohio Fertilizer Recommendations 1949-50

For Field Crops, Permanent Pastures and Hay Fields

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For soil building and conservation, the average annual fertilizer usage per acre for the rotation should equal or exceed 200 pounds, with the heavier applications on the more responsive crops. The need for fertilizers is increased when manure is wasted and crop residues or hay are sold from the farm.

High Quality Sod Crops Essential.—It is of paramount importance that every farmer adequately fertilize the small grain crop in which "soil-building" legumes are to be seeded. On the average farm, this is the most important fertilizer application made in the rotation.

Seedings, containing legumes for hay, pasture, green manure or seed production, should be planned for all small-grain fields. Such action would be the first step in improving the productivity of Ohio soils, which has been decreasing because of large wartime acreages of cultivated crops.

The regular fertilization of permanent pastures and of meadows, used for pasture or hay, to be kept for two years or more, is essential and profitable.

Other Soil Management Practices for Productivity Maintenance.—Best returns from commercial fertilizers are obtained where other sound soil management practices are a part of the program.

Lime should be applied as needed to control soil acidity and supply calcium and magnesium, essential plant nutrients. Most common field crops, and especially the "high-powered" legumes—alfalfa and sweet clover—do best when soils are limed to approximate neutrality.

Manure is an excellent fertilizing material as well as an improver of soil structure when properly supplemented with commercial fertilizers. Manure is a perishable product—the nitrogen and potash are rapidly lost by careless handling and storage in open barnyards.

Whenever practicable, manure should be stored under cover or hauled directly from the stable to the land. Fall and winter top-dressing of wheat with 5 to 8 loads of manure per acre helps insure meadow crop seedings, particularly on light-colored soils. On productive soils, where wheat frequently lodges, only strawy manure should be used for winter mulching.

Under cash grain systems of farming, residues like straw, stover and soybean haulm should be left on the land. When the straw from a small grain crop is sold, to help the new seeding get established, or for other reasons, the mineral nutrients removed per acre are equivalent to those found in 100 to 150 pounds of 0-9-27. Each ton of alfalfa hay sold contains approximately 10 pounds of phosphoric acid and 40 pounds of potash.

Legume-grass sod crops are the most effective means of renewing the favorable soil structure or "tilth" required for high crop yields and efficient use of chemical fertilizers. Soil depleting row crops like corn, soybeans and sugar beets should be grown in rotation with high-quality legume-grass sod crops which restore organic matter, nitrogen supply and the desirable soil structure condition called "good tilth."

Thick-growing sod crops can be used as the backbone of conservation farming in Ohio, but they cannot do the job alone on rolling or hilly lands. Best returns from good fertility practices are invariably obtained where soil and water conservation practices, such as strip cropping, contour farming, terracing and other conservation measures, are used to keep soil, water, organic matter, lime and fertilizer at home on the fields.

Grades and Analyses.—The series of figures by which a grade or analysis is designated expresses the percentage of total nitrogen, available phosphoric acid and water-soluble potash respectively.

The grades of mixed fertilizers recommended for manufacture, sale and distribution in Ohio in 1949-50 are:

Ratio	*Grades*	*Ratio*	*Grades*
0-2-1	0-20-10	1-4-4	3-12-12
0-1-1	0-12-12	1-3-6	3-9-18
	0-20-20	1-3-2	4-12-8
0-1-2	0 10-20	1-2-2	5-10-10
0-1-3	0-9-27	2-1-1	10-6-4
1-1-1	8-8-8	1-4-2	4-16-8

General Principles.—Phosphate fertilizers are needed by all crops on all Ohio soils.

Potash needs are highest on sandy and muck soils. On other soils, the need for potash is less, when crop residues are left on the field regularly or when the crops are fed and protected manure returned to the fields with as little loss of nutrients as possible. Grades containing as much potash as phosphoric acid are recommended when the field is not completely manured during the rotation, or when the crop residues are removed.

Less nitrogen is recommended on productive soils, where legume sods or green manure crops are plowed down regularly, where good yields of corn are obtained, and where the grain crops produce a large straw growth and lodge. The regular use of manure also encourages lodging of small grains, although strawy manure may temporarily lead to nitrogen deficiency. On less productive soils, corn and the grasses will respond to heavy applications of nitrogen. The quantity and quality of sod crops grown in the rotation, and the method of handling manure and residues, governs the amount of nitrogen recommended on all field crops.

Corn.—Corn is responsive to phosphate, potash and nitrogen. Hill or row applications are recommended for all conditions: 150 pounds for applications in the hill and 300-400 pounds for drilled corn or as a row application on checked corn. The same applies to sweet corn.

Productive soils..... 0-12-12 or 0-20-10
Less productive soils.....3-12-12, 4-12-8, 4-16-8 or 5-10-10
Sandy and muck soils.....3-9-18

On the less productive soils and where there is likely to be a deficiency of nitrogen, because crop residues, grass sods, strawy manure, etc., are plowed under, additional nitrogen may be supplied by broadcatsing 50 to 60 pounds of nitrogen before plowing and applying 300-400 pounds of 3-12-12 or 4-12-8 per acre drilled in the row. The nitrogen fertilizer may be applied broadcast with a grain drill before plowing.

Fifty pounds of nitrogen may be supplied in an application of 250 pounds of sulfate of ammonia or cyanamid, 150 pounds of ammonium nitrate, or 325 pounds of nitrate of soda.

For sweet corn for canning, use above complete fertilizer in row or hill.

Small Grains.—Four hundred to five hundred pounds per acre are recommended when a meadow seeding is made with the grain crop. This may be reduced one-third when a seeding is not made. Grades containing only phosphoric acid and potash are recommended for grain on highly productive land where the grain is likely to lodge and where wheat is sown on or immediately following the fly-safe date. Four hundred to five hundred pounds of fertilizer containing nitrogen are recommended on land where the wheat is not apt to lodge or where the seeding of grain is delayed following soybeans or corn.

Productive soils.....0-20-10 or 0-12-12
Less productive soils.....4-12-8, 3-12-12 or 4-16-8
Sandy, muck and peat soils..3-9-18

The fertilizer recommendation for seedings made without a companion grain crop is the same as for small grains.

Established Alfalfa and Ladino Clover Meadows or Pastures.—Liberal applications of both phosphoric acid and potash are especially important. Four hundred pounds is recommended for second harvest year and then every other year. Use 0-10-20 or 0-12-12 and 0-20-0 when field is completely and regularly manured.

Timothy or Other Grass Meadows.—Apply phosphorus and potash as suggested for alfalfa meadows. Apply 50 to 60 pounds of nitrogen broadcast in fall, winter or early spring when more hay or pasture is needed. (See corn fertilization for nitrogen carriers.)

Permanent Pastures.—Initial treatment, 400 to 500 pounds per acre of 0-20-0 or 0-20-10. An application of manure will hasten the improvement of limed and fertilized unproductive pastures. Seeding ladino clover or alfalfa-ladino mixtures, following the necessary seed bed preparation, also hastens the improvement of unproductive pastures.

Later, apply 400 to 500 pounds per acre of 0-20-10 or 0-12-12 every third or fourth year. (0-20-0 if field is completely and regularly manured.)

To advance the date for early spring grazing, apply on fair to good grass sods, 40 to 60 pounds of nitrogen per acre in fall, winter or early spring. (See corn fertilization for nitrogen carriers.) Treat ⅓ to ½ acre per cow. When nitrogen and mineral fertilizers are to be applied the same year, 600 pounds per acre of 8-8-8 may be used.

Soybeans.—On acid soils, soybeans give a marked response to applications of limestone. Soybeans give less response to direct applications of fertilizers than to do other field crops. The most profitable way to fertilize a

soybean rotation is to increase the rates of fertilization on the responsive crops. such as corn, sugar beets, truck crops or the small grains in which meadow seedings are made. If soybeans are grown continuously on a field, 200 to 300 pounds of 0-12-12 per acre should be applied every year in a manner that avoids contact of the seed with the fertilizer. The same application is suggested if soybeans grown in rotation are to be fertilized directly.

Potatoes:—

Early Planted..... 1500 lbs. 5-10-10 in row

Late Planted..... 1500 lbs. 3-12-12 or 5-10-10 in row

When field is manured, use 50 pounds less fertilizer for each spreader load applied.

Tobacco.—For cigar filler, 600 to 800 pounds of 3-12-12 in the row, but not in contact with the plants, is recommended.

For white burley tobacco plow under, or work into the soil immediately after plowing, 1,000 pounds of 8-8-8 with half the potash in the sulfate form. Apply 300 to 600 pounds of 4-12-8 or 3-12-12, preferably with half the potash in the sulfate form in the row. An alternative treatment is the use of 600-800 pounds of 3-12-12 or 4-12-8 on a rye or rye grass cover crop in the fall and the plowing under of 60 pounds of nitrogen in the spring, with the row application recommended above.

Sugar Beets—Profitable sugar beet production depends on a productive soil in a high state of tilth. A favored place for the beet crop in the rotation is following a 2- or 3-year-old manured legume-grass sod.

Row fertilization of 350 to 400 pounds per acre of 3-12-12 or 4-12-8 (3-9-18 on muck soils) is recommended; and where beets follow grassy sods and/or an application of strawy manure, additional nitrogen at the rate of 50 to 60 pounds per acre broadcast and plowed under, or 600 pounds per acre of 8-8-8 on the furrow bottom, has on the average been an economic practice.

Canning Tomatoes *(Basic application).*—Apply 600 to 1000 pounds per acre, either as a plow-under application or drilled deeply after soil is fitted, of one of the following grades:

Soils high in fertility on which legumes have been grown regularly, 5-10-10 or 3-12-12.

Lighter colored soils, or for soils on which few legumes have been grown or no manure applied, 5-10-10.

Light-colored heavy soils on which corn stover, straw or other strawy material is being plowed down, 8-8-8, to be used only as a plow-under application.

Maximum applications are recommended only on soils in good tilth from which maximum yields may be expected.

Direct Seedings. In addition to the above, apply in the row 2 inches below and directly beneath the seed, 200 to 300 pounds per acre of 3-12-12, 5-10-10 or 4-12-8.

Transplanting. Use a starter solution high in phosphorus, prepared according to directions with the material.

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